Idaho Straw Assembly Business Models

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Overview & Objective

Overview:

- Culmination of 2 year Feasibility Study
  - Short History to set stage
- Present Options
  - Technical
  - Business Models and Structure
- Determine Interest in Future Cooperation

Idaho's Residue Production & Straw Availability from Wheat, Barley & Oats by Region

Region	Harvested Acres	Total Grain Production (1,000 bu)	Total Residue Production (tons)	Total Available Straw (tons)	Net Available Straw (tons)
NI	512,000	31,762	1,167,229	466,893	387,986
SWI	162,125	14,731	669,136	267,656	260,963
SCI	399,625	37,689	1,623,788	649,516	638,153
EI	**1,053,750**	**72,993**	**2,957,348**	**1,182,939**	**1,010,632**
State	2,127,500	157,175	6,417,500	2,567,001	2,297,732

Source: The Availability, Alternative Uses and Value of Straw in Idaho
Report to the Idaho Wheat Commission, University of Idaho, 1995

Project Overview

- Straw Value Add Committee formed to explore opportunity for straw-to-ethanol business.
- Secured $450K USDA Rural Development grant and $530K private match for project.
- Project Goals:
  - Establish the economics, logistics, and environmental impacts of distributed in-field straw grinding / chopping
  - Determine the best immediate and long-term straw assembly operational scenario(s), including consideration of storage options

Project Overview

Project Goals cont.

- Prove the concept that a powdered straw product can be produced and delivered to a biorefinery
- Develop a comprehensive business plan
- Enterprise Feasibility plan
- Marketing plan
- Straw assembly enterprise business operation plan (i.e., corporate structure, management, contracting, and financing)

Project History

Industry Partners

- Idaho Wheat Commission
- Idaho Grain Producers Association & National Association of Wheat Growers
- Idaho Barley Commission
- 126 Idaho Growers on Straw Value Add Committee
- Potato Growers of Idaho & National Potato Council
- Idaho and American Farm Bureau
- National Farmers Union

Partners – Federal

- **U.S. Senator Larry Craig**
- U.S. Senator Mike Crapo
- U.S. Representative Mike Simpson & Butch Otter
- Department of Energy – Idaho National Laboratory
- United States Department of Agriculture
  - $450,000 Rural Development Grant

Partners – State

- Eastern Idaho Economic Development
- Governor's Office
  - Department of Agriculture
  - Department of Commerce and Labor
- Diamond Z Manufacturing
- Farm Credit Services – Spokane District
- CH2M Hill
- Numerous Farm Businesses
  - McCrae Custom Farming
  - D&L Custom Farming
  - Sebs Feed and Grain
  - K-M Custom Farming

Direct Support of Project

- Diamond Z Manufacturing
- Farm Credit Services – Spokane District
- CH2M Hill
- Numerous Farm Businesses
  - McCrae Custom Farming
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Raw Supply Factors

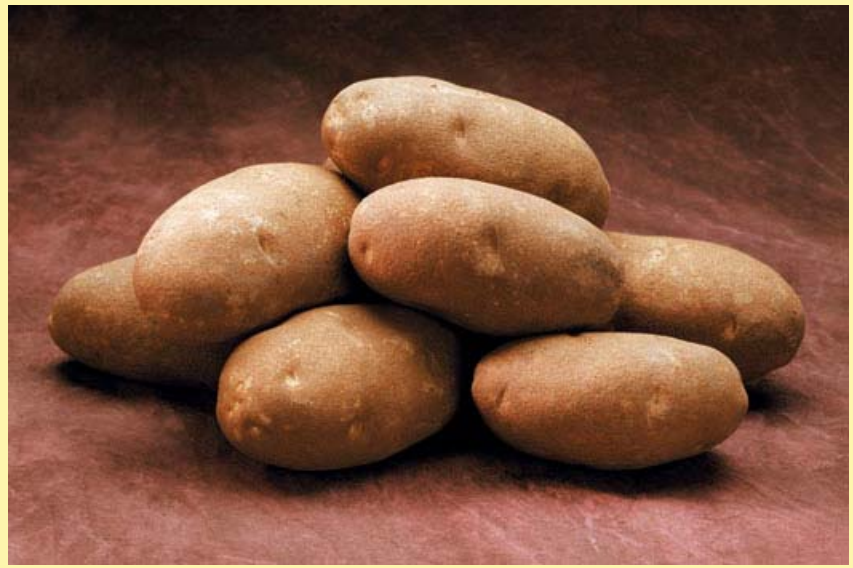
- Demand Communication
- Production Issues
- Storage, Shrink, Preprocessing
- Quality
- Price
- Finished Product Value
- Continuous Improvement

Potential Business Organization

- Four Distinct Potential Business Structures
  - Wholly Owned w/contracting relationship
    McCain Foods model
  - Wholly Owned with Exclusive Supply Arrangement
    Busch Agra-services model
  - Wholly Owned w/supplier vesting
    Amalgamated Sugar Co. pre-1998, Ogden, Utah
  - Cooperative Ownership
    Snake River Sugar Company, Boise, Idaho

McCain Foods "Contracting" Model

- **Company Structure** – Privately held
- **Raw Product Purchased** - $40-50 million
- **Approximate # Raw Suppliers** – 80-100
- **Raw Procurement** – Negotiated contract with Grower Bargaining Association & spot market purchases



Bush Agra-services Model

- **Company Structure** – Division of Public Company, serving parent company
- **Raw Product Purchased** - $45-60 million
- **Approximate # Raw Suppliers** – 250
- **Raw Procurement** – Two tier contracting program (preferred and common supplier status) & spot market purchases

Amalgamated Sugar Model

- **Company Structure** – Stock Company
- **Raw Product Purchased** - $200 million
- **Approximate # Raw Suppliers** – 1,500
- **Contracting system** – Negotiated revenue sharing contract

Amalgamated Sugar Model

Grower Contribution

Company Contribution

Income from Refined Sugar
Minus Shared Cost
Net receipts

Share “Nets” 55%

Share “Nets” 45%

Amalgamated Sugar Model Expense Sharing

- **Grower Expenses**
  - Land
  - Crop Production
  - Harvest and Delivery to Company
  - Quality Incentives or Deductions
  - Tare & Shrink

Amalgamated Sugar Model Expense Sharing

- **Company Expenses**
  - Storage facilities
  - Receiving
  - Documenting Quality
  - Processing
  - Packaging & Storage

Amalgamated Sugar Model Expense Sharing

- **Shared Expenses**
  - Marketing Expenses
  - Transportation to Market

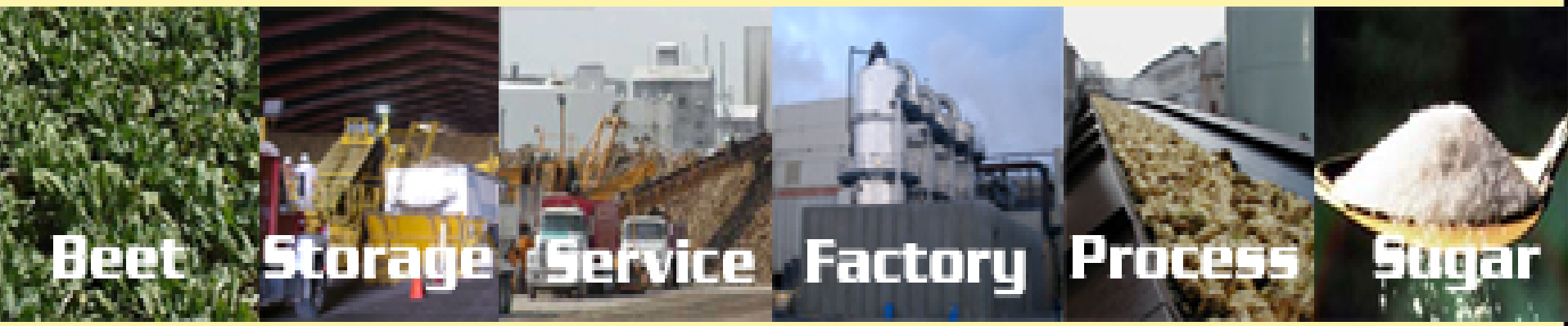
Amalgamated Sugar Model Income Sharing

Gross Sales Price

(Marketing Expenses)

Net Sales Price

“Nets” divided per negotiated shares



Snake River Sugar Cooperative Model

- **Company Structure** – Grower Owned Cooperative
- **Raw Product Purchased** - $240 million
- **Approximate # Raw Suppliers** – 1200
- **Acres** – 220,000
- **Raw Procurement** – “Right & Obligation to Supply”
- **Price** – Plant needs & obligations supercede grower interest. All distributable cash to growers.

Snake River Sugar Cooperative Model

Grower Contribution

Company Contribution

Income from Refined Sugar
Minus Company Cost
Net receipts

Grower Share “Nets”
100%

McCain Foods "Contracting" Model

	Grower		Processor	
Value Chain Components	**Incentive**	**Control**	**Incentive**	**Control**
Agricultural Land "Plant"				
Crop Production & Harvest				
Crop Quality				
After Harvest Storage				
Preprocess &To-Factory Freight				
Feed Stock Flow Management				
Raw Processing				
Marketing				
Government Policy				

Bush Agra-services
“Exclusive Supplier” Model

	Grower		Processor	
Value Chain Components	**Incentive**	**Control**	**Incentive**	**Control**
Agricultural Land "Plant"				
Crop Production & Harvest				
Crop Quality				
After Harvest Storage				
Preprocess &To-Factory Freight				
Feed Stock Flow Management				
Raw Processing				
Marketing				
Government Policy				

Amalgamated “Net Sharing” Model

	Grower		Processor	
Value Chain Components	**Incentive**	**Control**	**Incentive**	**Control**
Agricultural Land "Plant"				
Crop Production & Harvest				
Crop Quality				
After Harvest Storage				
Preprocess &To-Factory Freight				
Feed Stock Flow Management				
Raw Processing				
Marketing				
Government Policy				

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Required Company Products & Services

- Contracting with growers
- Harvest & Storage
- Pre-Processing
- Freight Services
- 24/7 biomass supply to throat of reactor

Which Model Works Best?

- McCain
- Busch
- Amalgamated
- Snake River Co-op

Grower Investment Potential

Amalgamated Sugar 1997 Purchase Example

$250 mil purchase price + operating capitol

$88.8 mil grower capitol

$180 mil debt and seller financing

Growers earnings were aprox. $33 mil annually

Growers invested 8 X earnings in purchasing Amalgamated Sugar

Grower Investment Potential

1) Straw value per acre ($10T X 2 T/A = $20 P/A)
2) Contracted acres (600K Tons / 2 T/A = 300K acres)
3) 300K Acres X $20 net earnings P/A = $6 mil
4) $6 mil earnings X 8 = $48 mil potential investment by Growers

Conclusions and Opportunities

- Idaho offers assured harvest, continuous improvement, collaboration, & resources
- Idaho growers understand 4 distinctly different raw supply models
- Idaho growers and/or Companies are interested in creating and capturing new value.
- Where to from here?

Truckload of Waste? Bedding? Or…

850 Gallons of Ethanol !